APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,990	02/18/2004	Stanley Loren Bentley	6890-74183	3319

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EXAMINER
LIN, SUN J

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 February 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-52</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-52</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02/18/2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to application 10/780,990 filed on 02/18/2004.
Claims 1 – 52 remain pending in the application.

Claim Objections

2.   Claims listed below are objected to because of the following informalities:

Claim 1, line 2, before "steps" delete —the—.

Claim 5, line 2, before "user-supplied" insert —the—.

Claim 6, line 2, before "user-supplied" insert —the—.

Claim 7, line 2, before "circuit-board manufacturing cost date" insert —the—.

Claim 7, line 2, change "a manufacturing cost database" to —the
manufacturing cost database—.

Claim 8, line 3, change "a manufacturing cost database" to —the
manufacturing cost database—.

Claim 10, line 1, change "the step" to —a step—.

Claim 11, line 1, change "the step" to —a step—.

Claim 13, line 1, change "the step" to —a step—.

Claim 16, line 2, change "the user" to —a user—.

Claim 17, line 1, after "comprising" insert —a step of—.

Claim 18, line 2, change "a tooling cost" to —the tooling cost—.

Claim 19, line 1, before "steps" delete —the—.

Claim 19, line 5, after "selected-portion" insert —of the user interface
application—.

Claim 19, line 7, change "the user" to —a user—.

Claim 20, line 2, before "steps" delete —the—.

Claim 20, line 11, change "manufacturing cost data" to —manufacturing
capability data—.

Claim 23, line 2, change "a manufacturing capability database" to —the
manufacturing capability database—.

Claim 24, line 2, before "user-supplied" insert —the—.

Claim 25, line 2, before "user-supplied" insert —the—.

Claim 26, line 2, before "circuit board manufacturing" insert —the—.

Claim 26, line 2, before "manufacturing capability database" insert —**the**—.

Claim 27, line 2, before "circuit board manufacturing" insert —**the**—.

Claim 27, line 3, change "a manufacturing capability" to —**the manufacturing capability**—.

Claim 30, line 1, before "steps" delete —**the**—.

Claim 30, line 5, after "selected-portion" insert —**of the user interface application**—.

Claim 30, line 7, change "the user" to —**a user**—.

Claim 31, line 2, before "steps" delete —**the**—.

Claim 32, line 4, change "machinevia" to —**machine via**—.

Claim 34, line 2, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 34, line 2, change "a manufacturing capability" to —**the manufacturing capability**—.

Claim 35, line 2, before "user-supplied" insert —**the**—.

Claim 36, line 2, before "user-supplied" insert —**the**—.

Claim 37, line 1, before "retrieving" insert —**the step of**—.

Claim 37, line 2, before "circuit board" insert —**the**—.

Claim 37, line 3, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 38, line 1, before "retrieving" insert —**the step of**—.

Claim 38, line 2, before "circuit board" insert —**the**—.

Claim 38, line 3, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 39, line 1, before "retrieving" insert —**the step of**—.

Claim 39, line 3, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 40, line 1, before "retrieving" insert —**the step of**—.

Claim 40, line 2, before "circuit board" insert —**the**—.

Claim 40, line 3, change "a manufacturing capability" to —**the manufacturing capability**—.

Claim 41, line 1, before "retrieving" insert —**the step of**—.

Claim 41, line 2, before "circuit board" insert —**the**—.

Claim 41, line 3, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 42, line 1, before "retrieving" insert —**the step of**—.

Claim 42, line 3, change "a manufacturing capability" to —**the manufacturing capability**—.

Claim 43, line 1, before "updating" insert —**the step of**—.

Claim 43, line 2, before "circuit board" insert —**the**—.

Claim 43, line 3, change "a manufacturing cost" to —**the manufacturing cost**—.

Claim 44, line 1, after "comprising" insert —**a step of**—.

Claim 46, line 1, before "determining" insert —**the step of**—.

Claim 47, line 2, change "the user" to —**a user**—.

Claim 48, line 1, after "comprising" insert —**a step of**—.

Claim 49, line 2, change "a tooling cost value" to —**the tooling cost value**—.

Claim 51, line 3, change "a manufacturing cost database" to —**the manufacturing cost database**—.

Claim 52, line 3, change "a manufacturing capability database" to —**the manufacturing capability database**—.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

(1).   Determining the scope and contents of the prior art.
(2).   Ascertaining the differences between the prior art and the claims at issue.
(3).   Resolving the level of ordinary skill in the pertinent art.
(4).   Considering objective evidence present in the application indicating obviousness or nonobviousness.

4.   Claims 1 – 18, 20 – 29 and 31 – 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* over "*CALS 2 Technical Goat* "(1997) published by *Swedish Defense Material Administration* (called *SDMA* hereinafter) in view of "*New Models to Speed the*

Development of Electronics Components" (1999) published by *PREAMP CONSORTIUM*
(*JOINT VENTURE*) (called *PCJV* hereinafter).

5.   As to Claim 31, *Willems et al.* show and teach the following subject matter:

- A method of designing a (printed) circuit board – [Fig. 2; Figs. 12 –17; Fig. 22; Paragraph 0202];

- receiving user-supplied circuit board design data from *data entry device* of a *client machine* – [Fig. 24; Fig. 18];

- retrieving *circuit board manufacturing cost data* regarding the (printed) circuit board design under study from a *manufacturing cost database* – [Paragraph 0464];

- *(User interface) application display* on the client machine in a network – [Fig. 20 – 34]; Displaying the manufacturing cost data on the (user interface) application display on the client machine – [Fig. 28]; Notice that after retrieving new circuit board manufacturing cost data received from the server machine, the value of the manufacturing cost data shown on the application display is updated.

Willems et al. does not teach a method of transmitting a *user interface application* from a server machine to a client machine via a publicly-*accessible-global network* (e.g., *Internet*). But *SDMA* discloses a scheme of *sharing and exchange manufacturing data* (e.g., manufacturing cost data and/or manufacturing capability data), which allows *multiple users* to access all parts of necessary information set *in real time* (sharing) or transfer it *from a remote location* (e.g., a *server machine*) to their own location or *vice versa (exchange)* – [**Sharing and exchange**: Page 51]. *SDMA* also discloses the following subject matter:

- **STEP** (**ST**andard for Exchange of Product Model Data) – for exchange of product information – [Page 81]; Notice that, in the **STEP** group, the product (manufacturing) information is exchanged between a client machine and a server machine;

- Databases – for reliable *long term storage* of *very large amount of (product) information* (e.g., manufacturing cost data and/or manufacturing capability data) – [Page 81];

- Application interfaces at client machines and a server machine – [Fig. 18].

It is well-known in the arts that a _user interface application_ is transmitted from a server machine through the Internet, and it can be downloaded on a client machine by a user. Notice that the product manufacturing information (e.g., manufacturing cost data) is retrieved from a database in a server machine in order to share the existing product manufacturing information with a user/designer thereby _reducing development time and cost in manufacturing electronic components/devices_ (e.g., circuit boards).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of _SDMA_ in transmitting a _user interface application_ from a server machine to a client machine via a publicly-accessible-global network (e.g., Internet), to allow a client/user to retrieve the existing circuit board manufacturing cost data from a circuit board manufacturing cost database in a server machine in order to reduce development time and cost in manufacturing a circuit board.

Willems et al. teach retrieving circuit board manufacturing cost data from a manufacturing cost database, and _SDMA_ discloses the STEP scheme for exchanging product manufacturing information between a client machine and a server machine. _Willems et al._ and _SDMA_ does not explicitly disclose retrieving _circuit board manufacturing capability data_ from a (manufacturing capability) database. But _PCJV_ teach (1) utilizing STEP Tools for _sharing design and manufacturing information_, and retrieving _circuit board manufacturing capability data_ from a manufacturing capability database _in order to reducing time-to-market and development costs_ in developing and manufacturing a (printed) circuit board (2) using _STEP data application interface_ for utilizing the STEP Tools (3) STEP is an international standard that defines standard product model for automation systems in order to facilitate the _capture and use of all information (e.g., PCB manufacturing cost data and/or PCB manufacturing capability data) relevant to product design and manufacture_.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of _PCJV_ in utilizing

STEP application interface in use of STEP Tools for sharing design and manufacturing information, and retrieving circuit board manufacturing capability data from a manufacturing capability database in order to reducing time-to-market and development costs in developing and manufacturing a (printed) circuit board.

Notice that the _STEP data application interface_ can update the user interface application on the client machine based captured circuit board manufacturing cost data and/or the circuit board manufacturing capability data received from the server machine via the Internet.

For reference purposes, the explanations given above in response to Claim 31 are called **[Response A]** hereinafter.

6.   As to Claims 1, 20 and 50, reasons are included in **[Response A]** given above.

7.   As to Claims 2, 3, 21, 22, 32, 33 and 51, reasons are included in **[Response A]** given above. It is well-known that the user interface application is transmitted from the server machine via the Internet, and is to be downloaded the client machine in response to a user-supplied (download) request.

8.   As to Claims 4 and 23, reasons are included in **[Response A]** given above. Notice that a manufacturing capability database and the user interface application associated with user-supplied circuit board design are transmitted from the server machine to the client machine via the Internet, which is a publicly-accessible global network.

9.   As to Claim 34, reasons are included in **[Response A]** given above.

10.   As to Claims 5, 6, 24, 25, 35 and 36, as explained in **[Response A]** given above, the user-supplied circuit board design data is received by the client machine via a data entry device (i.e., input device). Since <u>SDMA</u> discloses in Fig. 18 that there is a one-to-one correspondence of application interface in a client machine and the server machine, the user-supplied circuit board design data is received by the server machine via the Internet.

11.   As to Claims 8, 9, 38 and 39, reasons are included in **[Response A]** given above.

12.   As to Claims 27, 28 and 52, reasons are included in **[Response A]** given above.

13.   As to Claims 10, 41 and 42, reasons are included in **[Response A]** given above.

14.   As to Claims 11, 12, 29 and 43, in the STEP, the circuit board manufacturing capability database is a *long term storage*, which supplies reliable up-to-date board manufacturing capability data to all client machine in the STEP Tools model; data in the user interface application is updated whenever a "update" bottom is push and/or a new board manufacturing capability data is available. It is a standard that whenever a data in the user interface application is changed (i.e., updated), a *traffic light image* (e.g., an indication marker which blinking and/or changing color) is displaced on the screen.

15.   As to Claims 13 – 16, *Willems et al.* teach that a supply chain (i.e., work center) is selected based on its product's *unit manufacturing cost* (UMC), which is defined as the *per unit cost* (i.e., per-circuit-board manufacturing cost value) of a completed finished good item (i.e., circuit board)…overhead costs (i.e., setup cost value) …process engineering costs & processing costs (i.e., run cost value) – [Paragraph 0008]. Notice that the overhead costs (setup cost value) and process engineering costs & processing costs (run cost value) of a circuit board are different for different work center (i.e., supply chain) of a circuit board manufacturing process.

In order to select a low cost supply chain, the UMC (per-unit-board manufacturing cost value) should be updated and displayed for a user – [page 25, Paragraph 0397, Table 12].

For reference purposes, the explanations given above in response to Claims 13 – 16 are called **[Response B]** hereinafter.

16.   As to Claims 17, 18, 48 and 49, reasons are included in **[Response B]** given above. Notice that the process engineering costs & processing costs include tooling cost value.

17.   As to Claims 44 – 47, reasons are included in **[Response B]** given above.

18.   As to Claims 7, 26, 37 and 40, in addition to reasons included in **[Response A]** given above, *Willems et al.* teach equipped database in computer system in both client machines and the server machine – [Fig. 18; Fig. 20]. It is inherent that the circuit board manufacturing cost data and/or circuit board manufacturing capability data retrieved from the server machine can be stored in the database equipped in the client machine for future retrieval.

19.   Claims 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* and "*CALS 2 Technical Goat* "(1997) published by *SDMA* and "*New Models to Speed the Development of Electronics Components*" (1999) *PCJV* in view of U.S. Patent No. 6,496,957 to *Kumagai*.

20.   As to Claims 19 and 30, *Willems et al.*, *SDMA* and *PCJV* show and teach all subject matter recited in Claims 1 and 20; they do not disclose steps of retrieving a circuit board design image based on a user selected-portion of the user interface application and displaying the circuit board image on the client machine to a user. But *Kumagai* shows in Fig. 1 and teaches determining a user selection-portion of circuit board design using a CAD tool, retrieving a circuit board design image based on the user selected-portion and displaying the circuit board design image on the client

machine to a user, which is well-known utilized in the manufacturing and/or supply chain in order to efficiently and accurately retrieve cost and/or capability/availability information from a server machine through the Internet.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *Kumagai* in determining a user selection-portion of circuit board design based on a user interface application and retrieving a circuit board design image based on the user selected-portion on the user interface application and displaying the circuit board design image on the client machine in order to efficiently and accurately retrieve cost and/or capability information from a server machine through the Internet.

Conclusion

21.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Sun James Lin* whose telephone number is (571) 272 - 1899. The examiner can normally be reached on Monday-Friday 9:30AM - 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jack Chiang* can be reached on (571) 272 - 7483. The fax phone number for the organization where this application or proceeding is assigned is 571- 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sun James Lin
Patent Examiner
Art Unit 2825
January 30, 2006